

REMARKS

The Office Action mailed on March 14, 2001, has been received and reviewed.

Claims 33-37 and 41-56 are currently pending in the application. Claims 33-37 and 41-56 stand rejected. Reconsideration of the referenced application is respectfully requested in view of the arguments below.

I. PTO-1449

An Information Disclosure Statement was filed herein on August 27, 1999, but no copy of the *first page* of the PTO-1449 was returned with the outstanding Office Action. A second copy of the PTO-1449 is enclosed herewith. It is respectfully requested that all the information cited on the PTO-1449 (which is the same as that of record to that date in the parent application hereto) be made of record herein and that an initialed copy of the PTO-1449 be returned to the undersigned attorney.

II. Drawings

Corrected formal drawings will be filed herein upon receipt of a Notice of Allowance and Issue Fee Due in the referenced application.

III. 35 U.S.C. § 103(a) Obviousness Rejections

Obviousness Rejection Based on U.S. Patent No. 5,672,542 to Schwiebert et al.

Claims 33-37 and 41-56 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Schwiebert et al. (U.S. Patent No. 5,672,542) (hereinafter “Schwiebert”). Applicants submit that Schwiebert does not teach or suggest the claims of the present invention.

M.P.E.P. 706.02(j) sets forth the standard for a Section 103(a) rejection:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable

expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). (Emphasis added).

The 35 U.S.C. § 103(a) obviousness rejection of claims 33-37 and 41-56 is improper because Schwiebert does not teach or suggest each and every element of the present invention as recited in claims 33-37 and 41-56.

Schwiebert teaches a mask that is made from metal and that includes apertures that are positioned correspondingly to the wettable regions of a substrate surface when the mask is placed upon the substrate. (*See* col. 6, lines 26-39). In addition, Schwiebert teaches a nonmetal mask that is formed on the surface of a substrate by forming a material (e.g., photo resist) layer on the substrate and by chemical, mechanical or plasma etching or laser ablating the desired size holes at locations of the layer above wettable pads of the substrate. (*See* col. 7, lines 24-28).

Each of independent claims 33, 43 and 49 of the referenced application, recites a preformed, nonmetallic solder mask that includes at least one open aperture. As stated above, Schwiebert fails to teach or suggest a preformed, nonmetallic solder mask with at least one open aperture. The only preformed solder masks that are taught in Schwiebert include metal. Moreover, with respect to the nonmetallic solder masks disclosed in Schwiebert, Schwiebert teaches that a solder mask material is first applied to a surface to form a material layer on the substrate surface before forming the apertures through the solder mask material.

In addition, independent claims 33 and 43 both recite that the at least one open aperture is formed through the layer at a location corresponding to a contact pad location "upon which the *preformed* solder mask *is to be disposed*." This recitation further indicates that the nonmetallic solder masks of claims 33 and 43, including the material layer and apertures thereof, have been formed prior to disposal thereof upon a substrate.

By way of contrast, Schwiebert's teachings are limited to a preformed *metallic* solder mask and to a nonmetallic solder mask that is formed *on* the surface of a substrate.

Independent claim 43 additionally recites that the layer of nonmetallic solder mask material of the preformed solder mask includes a surface that is "configured to be adhered to a substrate". Thus, independent claim 43 further emphasizes the preformed nature of the

nonmetallic solder mask recited therein. Again, Schwiebert neither teaches nor suggests a preformed, nonmetallic solder mask. Rather, Schwiebert teaches a preformed solder mask that includes metal and a nonmetallic solder mask that is not preformed but, rather, is formed *on a substrate*.

Independent claim 49 further recites that the layer of nonmetallic solder mask material is itself preformed.

For these reasons, it is respectfully submitted that Schwiebert does not teach or suggest each and every element of any of independent claims 33, 43, or 49. Therefore, each of claims 33, 43, and 49 is, under 35 U.S.C. § 103(a), allowable over Schwiebert.

Additionally, each of claims 34-37 and 41-42, 44-48, and 50-56 is allowable, among other reasons, as respectively depending, either directly or indirectly, from these independent claims.

Each of claims 35, 45, and 53 is further allowable since Schwiebert does not teach or suggest a solder mask having a layer thickness that substantially corresponds to a desired height of a conductive structure to be formed by use thereof.

In view of the foregoing, it is respectfully requested that the Office withdraw the 35 U.S.C. § 103(a) rejection of claims 33-47 and 41-56.

CONCLUSION

In view of remarks presented herein, it is respectfully submitted that claims 33-37 and 41-56 define patentable subject matter. An early indication of the allowability of each of these claims is respectfully solicited, as is a notice that the case has been passed for issuance. If questions should remain after consideration of the foregoing, the Office is kindly requested to contact the undersigned attorney at the address or telephone number given herein.

Respectfully Submitted,



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Date: May 30, 2001

Enclosure: Second copy of PTO-1449

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Form PTO-1449

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PATENT & TRADEMARK OFFICEINFORMATION DISCLOSURE CITATION
IN AN APPLICATION

(Use several sheets if necessary)

Docket Number (Optional)
3817US (97-1350)Application Number
Not yet assigned

Applicant Michael B. Ball and Chad A. Cobbley

Filing Date August 27, 1999

Group Art Unit Unknown

U.S. PATENT DOCUMENTS

| EXAMINER INITIAL | DOCUMENT NUMBER | DATE | NAME | CLASS | SUBCLASS | FILING DATE IF APPROPRIATE |
|------------------|-----------------|--------------------|-------------------|-------|----------|----------------------------|
| | 4,922,321 | May 1, 1990 | Arai et al. | | | |
| | 5,246,880 | September 21, 1993 | Reele et al. | | | |
| | 5,361,695 | November 8, 1994 | Takagi et al. | | | |
| | 5,388,327 | February 14, 1995 | Trabucco | | | |
| | 5,442,852 | August 22, 1995 | Danner | | | |
| | 5,460,316 | October 24, 1995 | Hefele | | | |
| | 5,473,197 | December 5, 1995 | Idaka et al. | | | |
| | 5,492,235 | February 20, 1996 | Crafts et al. | | | |
| | 5,497,938 | March 12, 1996 | McMahon et al. | | | |
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| | 5,510,156 | April 23, 1996 | Zhao | | | |
| | 5,519,580 | May 21, 1996 | Natarajan et al. | | | |
| | 5,539,153 | July 23, 1996 | Schwiebert et al. | | | |
| | 5,565,033 | October 15, 1996 | Gaynes et al. | | | |
| | 5,586,715 | December 24, 1996 | Schwiebert et al. | | | |
| | 5,593,080 | January 14, 1997 | Teshima et al. | | | |
| | 5,600,180 | February 4, 1997 | Kusaka et al. | | | |
| | 5,637,832 | June 10, 1997 | Danner | | | |
| | 5,663,530 | September 2, 1997 | Schueller et al. | | | |

OTHER DOCUMENTS

(Including Author, Title, Date, Pertinent Pages, Etc.)

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|------------------|-----------------|--------------------|--------------------|-------|----------|----------------------------|
| | 5,672,542 | September 30, 1997 | Schwiebert et al. | | | |
| | 5,676,853 | October 14, 1997 | Alwan | | | |
| | 5,689,091 | November 18, 1997 | Hamzehdoost et al. | | | |
| | 5,717,252 | February 10, 1998 | Nakashima et al. | | | |
| | 5,735,452 | April 7, 1998 | Yu et al. | | | |
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| | 5,751,068 | May 12, 1998 | McMahon et al. | | | |
| | 5,787,580 | August 4, 1998 | Woo | | | |
| | 5,796,038 | August 18, 1998 | Manteghi | | | |
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|-----------------|------|---------|-------|----------|-------------|----|
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